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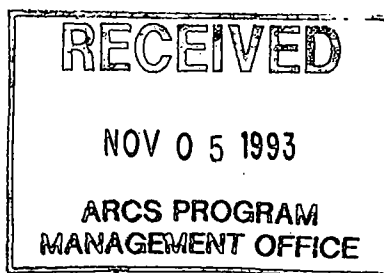
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REPLY TO THE ATTENTION OF:

HSRL-6J

Monday, 1 November 1993

Brian Troyer
U.S. Army Corps of Engineers
Buffalo District
CENCB-PP-PM
1776 Niagara Street
Buffalo, N.Y. 14207-3199



Re: **Review of the Site Characterization Interim Report for the Wisconsin Steel Works Site (WSW) in South Deering, Illinois.**

Dear Mr. Troyer:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA), Section 309 of the Clean Air Act and Executive Order 12088, the U.S. EPA, our contractor, WW Engineering & Science (WWES), and the Illinois Environmental Protection Agency (IEPA) have reviewed the above referenced document for the Wisconsin Steel Works Site, South Deering, Illinois. In order to provide a more thorough review of the "Interim Report", the following additional sources of information were utilized: the Project Management Plan (January, 1993), a 1928 Utility Map of WSW, a copy of the Rapid Response Report (May, 1992) documenting OHM Corporation's previous remediation activities, Monitor Well Completion Reports and Soil Boring Logs (September/October, 1992).

In general, the Interim Report follows the suggested RI Report format outlined in the 1989 U.S. EPA publication, "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA." However, it is understood that the Interim Report is not an RI Report; rather, the Interim Report is a *preliminary* summary of the initial field sampling and analysis. As such, the information contained within the Interim Report has been technically reviewed in an effort to assist the U.S. Army Corps of Engineers as they develop additional investigative activities.

Thank you for the opportunity to provide comments on the Site Characterization Interim Report. If you have any questions, please contact me: (312) 886-0850.

Sincerely,

Laura J. Ripley

Laura J. Ripley
Federal Facilities Project Manager

Enclosure

cc: Eric Runkel, IEPA
Ted Lietzke, WWES

**U.S EPA, IEPA AND WWES
TECHNICAL REVIEW OF SITE CHARACTERIZATION INTERIM REPORT
WISCONSIN STEEL WORKS
SOUTH DEERING, ILLINOIS
AUGUST 1993**

GENERAL COMMENTS

In general, the Interim Report presents the results of the initial (Phase I) sampling and analysis in a logical manner. However, a number of the initial activities proposed in the RI Statement-of-Work have not been completed for the Interim Report. Some of the information addressed within the Interim Report has not been fully developed.

- Although we received the majority of the monitoring well and soil boring logs for review in a separate attachment from the Interim Report, we recommend that the logs be formally included in the Interim Report appendices. Additionally, the following monitoring well construction diagrams (MWCD) and monitoring well drilling logs (MWDL) were not included with the submittals to us for review: MWCD-1 to MWCD-6, and MWDL-1 to MWDL-6. Although we assume that these monitoring wells were installed previously by Dames & Moore, the logs should be included in this Interim Report for review.
- A USGS 7.5' topographic map with the site location has not been included in the Interim Report, and would be useful. (Is there also a topographic map of the WSW Site available with 1-foot contours on a 1" = 50' scale?)
- No discussion of previously-existing on-site water wells was included in the Interim Report. (The 5th paragraph of page 2 on the Statement-of-Work includes field verification of selected water wells on the WSW site.)
- Although Section 3.3 includes a general discussion of the region's surficial and bedrock geology, supplemental information from on-site and off-site water well logs would greatly increase our understanding of the site's sensitivity to contamination.
- The collection of ground water and river level measurements only during the spring and winter seasons of one year may be misleading. We recommend that monthly water levels be collected for a full year.
- The Interim Report discusses the existence of "two unconfined aquifers at the WSW site" on the 5th paragraph of page 3-16. (We assume that these "aquifers" are the Carmi Sand and the Wadsworth Till.) However, the 3rd paragraph of page 3-22 indicates that the Wadsworth Till "is technically an aquitard rather than an aquifer." We agree that this unit does not qualify as an aquifer, based on the slow recoveries and a hydraulic conductivity of 2.575×10^{-5} cm/sec. Nonetheless, the majority of the Interim Report refers to the till as an aquifer. These two geologic units are further characterized in the text, at times, as one hydrogeologic unit. (See, for example, the

"Sand and Till" piezometric surface maps in Appendix I.) If, as indicated on page 3-22, the Wadsworth Till is an aquitard, then we recommend that the geologic unit not be investigated as an aquifer (i.e. no monitoring well installations nor characterization via piezometric surface maps). Rather, we recommend that the aquitard's permeability be investigated by Shelby Tube sampling and laboratory analysis. We also recommend that the aquitard's thickness be determined, and the occurrence of sand lenses (see Figure 3-4 on page 3-10) be further investigated.

- The ground water flow rates presented on page 3-22 appear to be inaccurate although the hydraulic conductivities are reasonable. Please present all of the assumptions, including cross-sectional area, and provide the detailed calculations for review.
- Were any of the monitoring wells completed as water table wells? If so, which ones? If not, the existence of LNAPLs may not have been adequately investigated. (In fact, descriptions within the text and on the drilling logs of MW-5 and MW-19 suggest that LNAPLs of petroleum product are likely to exist.)

Issues which should be pursued either in the revision of the Interim Report or as part of the Phase II investigation are:

- In general, any areas that are indicated as existing within the WSW Trust should be investigated in this Interim Report. If certain areas were sold by the Trust and are no longer included in this investigation, then this circumstance should be documented within the text of the Interim Report.
- A complicated network of storm sewers once existed beneath the WSW facility. These sewers drained to the Calumet River through one of at least 14 sewer outfalls. Are these sewer lines still intact? These lines may affect natural ground water flow through the Carmi Sand. Have tracer surveys been considered as a possible tool to determine the effects of the sewer lines on ground water flow within the Carmi Sand?
- Where were the sewage treatment sludges and blast furnace ash disposed? If utilized as fill on-site, then we may have discovered the source of the scattered pesticide and PCB contamination, given that infrequent batches of pesticide-containing petroleum may have been introduced to the sewage treatment facility and blast furnaces.
- In general, the geologic stratigraphy needs to be characterized further. Soil borings should be advanced and samples collected from each area of concern to the depth of bedrock. We recommend that additional wells be installed within the Lemont Drift (overlying the bedrock). Nested wells would provide information concerning vertical gradients and vertical extent of ground water contamination.

- IEPA has published soil and ground water cleanup objectives for petroleum-release sites. Are portions of the WSW "petroleum-contaminated?" If so, IEPA clean-up objectives should be considered as state ARARs.
- Which geophysical methods are being considered to delineate the old North Slip and determine the depth of the three slips' sheet pilings?
- No soil borings or monitoring wells appear to have been placed in the vicinity of the steel "pickling" area (acid bath to strip steel prior to plating); the pickling area was approximately 500 feet northeast of the guard house on 106th Street. Has this possible acid contamination been considered as an environmental concern?
- Was waste oils or solvents used for fuel for the steel products on furnaces? If so, they could be the source of pesticides.
- Comparing the WSW site's soil analytical results with U.S. soil averages, Welsh soil averages, and Velsicol cleanup standards is not appropriate. We recommend instead, that the site's soils be compared with background soil samples from surrounding land.
- References need to be included as a chapter in this report.

SECTION 1.0 - INTRODUCTION

1. *General Comment* - Although pages 1-14 and 1-15 of Section 1.2.2 discuss each of the site's major areas, a few paragraphs introducing the entire steel-producing process would greatly enhance the significance of WSW's reference as "a truly integrated steel manufacturing facility" (6th paragraph of page 1-9).
2. *Section 1.2.2, Site History, Figure 1-3, Figure 2-1 and Pages 1-14 through 1-16* - Why are some areas which are indicated as existing within the WSW Trust not apparently included within the Interim Report's areas of investigation? (For example, land west of Torrence Avenue or land west of the existing playground, formerly a railroad switching yard.) If sold by the Trust and no longer part of this investigation, then this circumstance should be documented within the text of the Interim Report.

Page 1-14, 1st Complete Paragraph - This paragraph states that the No. 1 and No. 2 Blast Furnaces were relined. What were the furnaces relined with?

3. *Section 1.2.4, Previous Investigations, General Comment* - The overall discussion of results from previous investigations do not lend a significant amount of satisfactory information. Reference to "trace amounts", "high levels", "about one percent", "elevated levels", "tested positive", "tested negative", "parts per thousand range"...etc. does not supply a verifiable comparison to any presented data or justification for investigation into particular areas associated with this Interim Report.

Evaluations and conclusions drawn from historical data utilized in this document appear erroneous. Specific results and details should be included in this section to assist the reader in evaluating previous studies and their relevance to the on-going investigation.

Page 1-23, Task No. 3 - Apparently the bottom of a sump was broken to prevent rain water retention. Would this not allow rain water to more easily percolate through possible contaminated underlying soils and more easily impact the ground water? Were the underlying soils sampled and analyzed?

Task No. 5 - This paragraph indicates that the vessels were replenished with additional liquids from nearby liquid-filled structures. Please identify the nearby liquid-filled structures. What type of liquids were used to replenish these vessels? Were these liquids sampled and analyzed?

Task No. 12 - Apparently an underground storage tank (UST) was removed and cleaned. Were the contents of the UST characterized? Was there any observed soil contamination upon removal of the tank? Were the pipes removed and cleaned with the tank? Was investigative sampling conducted to determine whether contamination exists in this area? We recommend that the following IEPA documents be considered with regard to USTs: "*IEPA Leaking UST Manual - Fall 1991*" and "*IEPA Soil Sampling Requirements - February 1993*".

SECTION 2.0 - PHASE I SITE INVESTIGATION

4. *General Comment* - Figure 2-1 has not been included in this section as indicated in the first paragraph of Section 2.1. It appears that Figure 2-2 has been reproduced twice in place of Figure 2-1.
5. *Section 2.1, Overview, Page 2-1, 1st Complete Paragraph* - The Statement-of-Work within the Project Management Plan indicated that all of the Site's monitoring wells were of stainless steel construction. Were the six wells previously-installed by Dames and Moore also stainless steel? And, consequently, compatible with the new wells.

The one monitor well which was determined to be inaccessible should be included as to where it was originally located. This would assist in determining if any data gaps may exist for that particular area.

2nd Complete Paragraph - Did the magnetometer survey generally indicate that miscellaneous metal existed throughout the site's subsurface or not?

3rd Complete Paragraph - Were water samples or sediment samples collected from any of the storm sewer manways? Is the general condition of the site's previous storm and sanitary sewer systems known?

6. *Section 2.2, Monitor Well Installation and Sampling, Page 2-1* - In the text, please specify which wells are screened in the Carmi Sand and which wells are screened in the Wadsworth glacial till. Typically, the auger size would be specified by the inner diameter, not the outer diameter (with time the outer diameter may change as it becomes worn down). No details regarding the monitoring wells' screened depths exists within the introduction. Although described as "Set ten (10) feet into the till layer," this description is vague. What specific indicator flagged the sand-till horizon? Please reference the location of the description of the screened depths. No details regarding the monitoring wells' screened depths exists within the introduction; please reference the location of the description of the screened depths.

Page 2-2 and 2-3 - See comment 4. The figure presented would be more readable if less of the surrounding community were included. The monitoring well, soil boring, and surface sampling identification labels are also not readily distinguished from each other. Otherwise, the figure presents a very useful overall perspective of the WSW site.

Page 2-4 and 2-5 - Page 2-3 and 2-4 suggest that the "typical sand well" and the "typical till well" were set below the ground water table. If the majority of the 24 monitoring wells are set beneath the water table, how can light non-aqueous phase liquids (LNAPLs) such as gasoline or fuel oil be detected as floating product impacts to the ground water? A 10-slot (0.01 inch) screen may not be narrow enough to adequately screen fine particulates from the till wells. Has this possibility been considered? No sampling and stabilization logs are available for review; so, we cannot comment on the turbidity variations. Total metals levels within the till wells may be greatly effected by fine particulates.

Page 2-6, First Paragraph - How were the wells developed and purged? Was the evacuated water containerized? How were the wells sampled for chemical analysis? Regarding monitoring well MW-3, what was the nature of the access problem? Is the well damaged?

7. *Section 2.3, Soil Boring Program, Page 2-6* - How were the soil samples collected? Were the soil samples composited prior to sample collection? What were the results of the grain size analyses, the Atterberg limit analyses, and the moisture content analyses? Please provide this information in an appendix to this report.

Soil and monitoring well boring logs should be included in the Interim Report.

8. *Section 2.4, Surface Water Sampling, Page 2-6* - Why was a "plastic bottle" used for surface water sampling? We recommend that future surface water sampling be conducted using either Teflon or stainless steel equipment. The use of a plastic bottle may cause organic compounds to contaminate the sample.

9. *Section 2.5, Sediment Sampling, Page 2-6* - Please explain the decontamination procedures between sampling events.

SECTION 3.0 - PHYSICAL CHARACTERISTICS OF THE STUDY AREA

10. *Section 3.1, Surface Features, Page 3-1, 1st Complete Paragraph* - Please include the available topographic maps within the Interim Report.

2nd Complete Paragraph - A table listing the elevation of the site's permanent monuments should be included in the Interim Report.

3rd Complete Paragraph - The referenced 1991 USGS topographic map should be included in the Interim Report.

4th Complete Paragraph - When did the Slag Area begin receiving slag? Are there some portions of the slag pile which are significantly older than other portions, thereby having a high risk of leaching contaminants?

11. *Section 3.3.1, Surficial Geology, Pages 3-4 and 3-6* - Based on the description within this section we understand that the thickness of the Wadsworth Till (approximately 30 feet) and the occurrence of the Lemont Drift (approximately 50 feet below grade) are based on "exploratory soil borings in the Lake Calumet area, each to a depth of 86.5 feet." Please provide these soil boring logs for review. We also recommend the advancement of soil borings on the WSW Site to the depth of bedrock to better describe site specific stratigraphy.

12. *Section 3.4, Site Geology and Subsurface Features, Page 3-7, 1st Complete Paragraph* - What criteria was utilized to constitute "moderately to highly" when relating to permeability of the Carmi sand unit? (See comment Page 3-15, 1st Incomplete Paragraph)

13. *Section 3.5, Regional Hydrogeology, Page 3-7* - What references were utilized to obtain information on "...exploratory soil borings in the Calumet area..."? Was this information based on borings completed for this Interim Report?

Pages 3-8 through 3-14, Geologic Cross-Sections - Although the cross-sections are helpful, the lack of actual monitoring well and soil boring logs restrict a more detailed analysis of the underlying geology of the site. As stated previously, please include the soil/well log borings within the Interim Report. Please include a symbol for the water level encountered in each monitoring well/boring during a particular measuring event.

Additionally, none of the borings appear to penetrate more than approximately 10 feet of till, yet the till is definitively illustrated on the cross-sections as being at least 20

feet thick (or to an elevation of 550 feet msl). Question marks or dashed lines should be shown for the till unit at these depths.

Page 3-15, 1st Incomplete Paragraph - What characterizes a geologic unit as "nearly impermeable?" Impermeable units are not generally considered aquifers. Why is the Wadsworth Till considered an aquifer?

1st Complete Paragraph - Although true that ground water flow within surficial unconfined aquifers "is generally regulated by local topography", no topographic maps are available for review within this Interim Report.

Ground water flow is logically suggested (and apparently mapped) toward the north and south slips; however, the cross-sections suggest that sheet pilings may penetrate as much as 10 feet into the Wadsworth Till. We understand that such slip walls are not perfectly sealed at their joints, but such steel "walls" may greatly reduce interaction between the slip's surface water and the Carmi Sand's ground water. Has this possibility been investigated? If so, what were the investigation's results?

Although radial ground water flow may be expected from hills to lower areas this is not likely the case for minor surface mounds. It is also unlikely that this radial flow would coincidentally occur around existing monitoring wells (as shown on the figures on page I-1, I-9, I-16, I-19, I-22, I-23, I-24, I-30, and I-33).

Several receptors are suggested as possibly modifying the ground water flow, such as sewer construction. This possibility should be better developed. At least 14 storm sewer outfalls appear to have discharged to the slips or the Calumet River (see 1928 map). This network of storm sewers likely provides a direct conduit for Carmi Sand aquifer and Calumet River exchange. The application of investigations such as a tracer survey may greatly increase our knowledge of the storm sewer effects.

4th Complete Paragraph - Is the Niagaran Dolomite mentioned on page 3-7 as existing at depths of 50 to 80 feet below the surface considered part of the "shallow bedrock aquifer system?" If so, ground water samples from the Niagaran Dolomite should be collected and analyzed for possible contamination from the WSW Site.

Last Paragraph - The reference to well production for the shallow bedrock aquifer system cannot be supported by the available data. Since this is a significant factor involved in determining Class I from Class II groundwater requirements it will be necessary to adequately determine production rates. (See comment page 3-16, Section 3.5.1, Site Hydraulic Characteristics)

Page 3-16, 1st Complete Paragraph - What standard is being used to base water quality in this paragraph?

14. *Section 3.5.1, Site Hydraulic Characteristics, Page 3-16, 4th Complete Paragraph* - Calculations and conclusions generated in this section do not appear completely accurate for the data presented. Also, the reliability of the data itself is questionable. This entire section should be re-evaluated to determine discrepancies. This section is **significant** in determining groundwater flow impacting this site and in classifying groundwater categorically (i.e. Class I vs. Class II).

The concept of "two unconfined aquifers" is not logical.

How can the average thickness of the Carmi Sand be 10 feet when page 3-7 indicates that its thickness ranges from 5 to 8 feet? How were the slug tests performed? How were the calculations performed? What calculation method was utilized? Please provide the raw slug test data, including printouts and plots in an appendix.

Page 3-17 and 3-18, Table 3-2 - What constitutes "O.K." data? We assume that "Error - fluctuating recovery" indicates that the water level in the monitoring well recovered very slowly or went dry during the slug tests. Please provide an explanation for these notes in the text.

Page 3-22, 1st Incomplete Paragraph - The reference to "MW-5" may be incorrect. The proper reference is believed to be MW-25 for this statement based on provided information. Refer to Figure 3-7 and Figure 3-9.

1st Complete Paragraph - Based on the text, piezometric maps for the slag area have been completed, but such maps do not exist within the Interim Report. We understand, however, that only two monitoring wells exist within the slag area; so, valid ground water maps cannot be interpreted. (Moreover, calculating a flow gradient based on only two monitoring wells is not likely accurate.) We recommend that a minimum of one additional monitoring well be installed in the slag area to triangulate the ground water flow/gradient.

Please indicate the data and wells from which the various ground water gradients were calculated.

The application of Darcy's equation as expressed assumes homogenous conditions and laminar flow throughout the aquifer system; no allowance is made for the aquifer's limited porosity (likely 30-40%). The resulting flow rates also suggest a cross-sectional area significantly larger than is reasonable. What porosity values were used? What cross-sectional area was assumed for the calculations? The calculations for this section should be included within the appendices.

We agree with the text's suggestion to refer to the Wadsworth Till as an aquitard based on the listed permeability. However, the permeability value is based on only

one slug test. Confirmation of the indicated permeability value is recommended via laboratory analysis of soil samples (perhaps utilizing Shelby Tubes).

Page 3-25, Figure 3-12 - The apparent slow water recovery of most of the till wells indicates that water level measurements from till wells cannot be utilized for accurate piezometric maps until they have equilibrated. This equilibration appears to take approximately two months. Monitoring well MW-21, a till well, indicates water levels which are very similar to nearby MW-22, a sand well. Perhaps MW-21 has not been properly sealed from the Carmi Sand ground water. Hence, its relatively speedy recovery and high water table could reflect leaky conditions. It is also important to note that slug tests from MW-21 have been used to characterize the till's permeability. Therefore, the Wadsworth Till appears to have a very low hydraulic conductivity and may actually be considered an aquitard rather than an aquifer.

Recovery within MW-13 also appears to vary considerably from the other till wells. The drilling log for MW-13 indicates the occurrence of "fill" and "tree fragments" at a depth of 20 feet. This well may have been set in material used to fill the old north slip, and, therefore, should be used with caution to characterize the till. (See also Figure 3-5 on page 3-13.)

Page 3-26, 1st Complete Paragraph - We recommend that MW-24 be re-surveyed.

How was it determined that certain water level measurements "were beyond the effects of the draw down?"

Page 3-26, 2nd Complete Paragraph - If no piezometric maps can be constructed for the Slag Area, how can a ground water flow rate be calculated?

- 15. *Section 3.6, Surface Water Hydrology, Page 3-31, Last Paragraph* - Please provide the well logs for the surrounding area's industrial and private wells, include a map with approximate locations.

Page 3-33, 1st Complete Paragraph - It is not understood why this paragraph was placed in the surface water hydrology discussion.

- 16. *Section 3.9, Ecological Resources, Pages 3-36 and 3-37* - We recommend that the following USEPA documents be considered with regard to an ecological study and impact assessment report: "Risk Assessment Guidance for Superfund, Volume II: Environmental Evaluation Manual, EPA/540/1-89/001", "Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference, EPA/600/3-89/013" and "U.S. EPA Region V - Regional Guidance for Conducting Ecological Assessments, April 1992".

SECTION 4.0 - NATURE AND EXTENT OF CONTAMINATION

16. *General Comments include the following :*

- ARARS and cleanup standards are based on site specific conditions and are to be determined by the appropriate Agency or Agencies (i.e. IEPA-USEPA). Comparisons can be made concerning relative criteria when its objectives are appropriate and clearly defined for a site investigation. However, to make determinations as to cleanup standards, potential ARARs, or contaminant impacts based on this information are considered erroneous and cannot be conclusive. The discussions involving "high, low, extremely, elevated, insignificant, significant, etc." inferences are purely subjective and should not be used to determine potential impact of contaminants utilizing any of the documented reference materials for comparisons or conclusions.
- It would appear that monitoring wells were only installed in the Carmi sand layer and in the Wadsworth glacial till layer. Is there an explanation why the Lemont Drift was not also investigated at this time?
- The presented data for the three (3) rounds of groundwater monitoring results for all of the wells does not appear to correlate to one another for each category (Ex. Page 4-71, Table 4-49 "MW1"). Extreme intervals observed for specific results will require identification and analysis. Also, some results are presented as two or three quantities for one round of samples. Is there an explanation for the additional results for one round of sampling?
- There are numerous results associated with this section that reference "less than" (<) for certain concentrations. The criteria for reporting analytical results as "less than" is not clearly defined. There does not appear to be a set standard or rationale for the utilization of the symbol "less than" when presenting these results. Also, the key qualifier "U" symbolizes a compound which was not detected. However, different quantities are associated with a similar chemical constitutes denoting non-detects for a given sample (ex. Page 4-19, Table 4-14 "Phenanthrene"). It is unclear what detection limits were utilized for non-detects and if they were reported accurately. Overall, it is unclear what QA/QC methods were emulated concerning the analytical presentation of data for this document.
- Throughout this section, it is stated that "A health risk assessment of..... levels is recommended and planned." We recommend that a risk assessment is performed for all chemicals of concern. We recommend that IEPA/USEPA determine what kind of approach should be taken as far as the reporting goes. Will a site-wide risk assessment be performed or will an operable unit approach be taken?
- Because the data tables are summary tables and typically represent one area, it is difficult to determine exactly what analytical scans were run for a particular sample. Please provide all of the data in tabular format in an appendix. It is sufficient to have

summary tables in the report text. We would recommend the following format changes/additions to the tables in the future;

- a) The tables be grouped by media (place all of the ground water analytical results into one table, all of the soil analytical results, etc.). One of the heading fields could be dedicated to specifying which area the monitoring well/boring/surface water/sediment sample is located.
 - b) The tables should include the sample date.
 - c) It would be useful to have the first column of each table listing the method detection limits.
 - d) It would be useful to add the applicable criteria to the tables also. Detected concentrations above the applicable criteria could be bolded or shaded.
 - e) The qualifiers provided by CLP labs have various meanings. For instance, a "B" for an organic scan means that the compound was found in a blank sample as well as an investigative sample. A "B" for an inorganic scan means that the analyte was detected below the contract required detection limit (CRDL) but above the instrument detection limit (IDL). Therefore, please be careful when combining organic and inorganic compounds on the same table.
- Please specify what ground water samples were filtered and what samples were not filtered. What size filters were used?
 - There are several occurrences where the analytical results for the ground water samples vary greatly. Some examples include:
 - a) MW9-cyanide concentrations from Rounds 1 and 3 were non-detect, Round 2 contained 120 ug/L.
 - b) MW8-chromium concentrations from Rounds 1 and 3 are low when compared to Round 2.
 - Was the same laboratory used for each round of sampling? Does this seem to consistently occur during only one round (could it be seasonal variations)? Were the same sampling procedures/equipment used? Were the wells all purged in the same manner?
 - What was the nature of the QA/QC effort for field sampling and analysis? How many trip blank, equipment blank, duplicate and matrix spike/matrix spike duplicate samples were collected? Was the analytical data QA/QC'd by the U.S. ACE? Please incorporate this information in the next submittal.

- Were any subsurface soil samples collected beneath the water table submitted to the laboratory for analyses? Once below the water table, the contamination is generally considered a ground water problem.
- 17. *Page 4-1, Entire Page* - Although Federal Land Disposal Restrictions (LDRs) exist and Illinois soil cleanup criteria exist for tank release sites, we recommend that IEPA/USEPA determine what criteria will be applicable and acceptable. The use of data from average and typical ranges found in U.S. soils, Welsh surface soils, the Velsicol chemical site (which one??), and Class II ground water standards may not be acceptable. Rather, local background concentrations may need to be determined.
- 18. *Page 4-4, Table 4-3 Soil and Ground Water Cleanup Objectives for Velsicol Site* - RE: The "**** footnote - Apply to all petroleum cleanups with the exception of gasoline." Is this considered a petroleum cleanup?
- 19. *Section 4.1, Office Area, Page 4.8, 2nd Complete Paragraph* - Only one boring was advanced in the office area (2.5 acres) to a depth of 25 feet. Additional borings are recommended to adequately characterize the area's possible soil contaminant levels. How was the office previously heated? Were underground storage tanks utilized to store heating oil? (Note that all three soil samples showed the presence of TRPH and Oil and Grease.)

4th Complete Paragraph - When were the three ground water sampling rounds completed?
- 20. *Section 4.2, Slag Area, Page 4-12* - While the slag itself is not hazardous by definition, compounds leaching from the slag into underlying soils may be producing impacted soils that are characteristically hazardous. Future investigations should include TCLP testing in areas of slag burial. We also recommend that the slag itself be TCLP tested.

Elevated concentrations of arsenic, barium, cadmium, chromium, copper, lead, manganese, selenium, zinc, cyanide, sulfide, and oil & grease were detected in samples collected from the slag area. In addition, elevated concentrations of chromium, lead, and cadmium were detected in ground water collected from monitoring wells installed within the slag area.

Page 4-23, 1st Incomplete Paragraph - Several detected contaminants appear to have been overlooked. For example, analytical results of SB-18 (1-5') indicate TRPH and Oil & Grease impacts. Please include a discussion of all contaminants demonstrating elevated concentrations.

Has the soil/fill containing 180 ug/kg aroclor (PCB) been excavated or sealed off from access? There are no fences around the slag pile and the public could encounter these soils.

21. *Page 4-24, Table 4-18 Summary of Contaminant Levels - Gasoline Tank Disposal in Slag Area* - Are the units on this table correct?

22. *Section 4.3, Steel Finishing Area, Page 4-28, 5th Complete Paragraph* - Are all of the listed chemicals suspect as being laboratory contaminants? The U.S. EPA recognizes only four volatile compounds as common laboratory contaminants. They are acetone, methylene chloride, methyl ethyl ketone, and toluene.

6th Complete Paragraph - We recommend that the location of the elevated chlordane and PCB contamination be re-sampled and analyzed for confirmation purposes.

It appears as though the elevated PCB estimate of 19,000 mg/kg for SB-10 (16-17') was omitted from the text's PCB discussion (although mentioned later on page 4-59 and 4-60).

Regarding the detections of chlordane, is there a possibility that the waste water treatment plant accepted liquid waste or that drums could have been cleaned out and the remaining liquids disposed of at the treatment plant (i.e., residues from pesticide containers)? Is there any history in the records of a connection with the Velsicol Chemical Company and this site? Was the treated water discharged into the Calumet River? How and where were any remaining sludges disposed of?

Page 4-59, 5th Complete Paragraph - Contrary to the text's suggestion, Table 4-21 does not indicate that SB-12 was advanced through fill to a depth of 25 feet. However, the vague sample descriptions listed for MW-13 do suggest that fill existed to approximately 30 feet, possibly the bottom of the old North Slip.

Page 4-60, 2nd Complete Paragraph - The elevated levels of chlordane in SB-11 should also be mentioned in this paragraph.

23. *Section 4.3, Water Treatment Plant Foundations, Page 4-63* -What disposal procedures were generally applied to the treatment sludges?

Last Incomplete Paragraph - Previously, the Wadsworth Till had been referred to as a silty clay unit; however, this paragraph suggests that MW-10 was set in a "sand and clay" Wadsworth Till. Nonetheless, Table 3-2 indicates than the low permeability till yielded only a "fluctuating recovery" during the slug tests. Sheet 2 of Figure 3-4 (page 3-10) also illustrates a sand lense within the till. The possibility of additional sand lenses within the till may allow contamination to penetrate the till to deeper units.

Page 4-78, Top Line - What is meant by the description "toxic"?

Page 4-79, 1st Complete Paragraph - As suggested in the text, MW-13 may be set within the old north slip and may be partially surrounded by fill material. We recommend that the slip's location and dimensions be better delineated.

24. *Section 4.4, Steel Production Area, Page 4-95, 2nd Paragraph* - The PCB observations require additional investigation.

4th Paragraph - We concur with the Interim Report's statement that "the source for chlordane at the (site) is perplexing"; consequently, additional historical research and ongoing pesticides analyses are recommended to determine the source.

5th Complete Paragraph - Why are clean-up standards set for the Velsicol site being applied to the WSW site?

Page 4-99, 1st Incomplete Paragraph - We concur with the Interim Report's recommendation that sediment samples from the precipitator foundations be TCLP tested.

2nd Complete Paragraph - How have "toxic wastes" such as these PCB-impacted sediments been disposed of from the WSW site?

4th Complete Paragraph - Please detail the levels of BTEX contamination in the text.

Page 4-113, 1st Paragraph - In addition to the recommended activities, we suggest that a water-table well be installed adjacent to MW-5 and that recovery of the free-product be commenced as soon as possible.

25. *Section 4.5, Blast Furnace Area, Page 4-113, 4th Paragraph* - This paragraph indicates that soil samples were collected beneath the water table for chemical analysis. Generally, soil samples are not collected in the saturated zone, where water can "wash" the soils. Were saturated soil samples collected for analysis? If so, why?

5th Complete Paragraph - Confirmation soil borings and soil sample analyses are recommended in the previously-detected PCB location. We also recommend that a monitoring well be set at the bottom of the Carmi sand to test for the existence of this very dense, non-aqueous phase liquid (DNAPL) on the till surface.

Regarding the detections of pesticides/PCBs and solvent type compounds, is there a possibility that liquid wastes were burned in the Blast Furnace or Continuous Caster (steel production area)? How and where was the ash/residue from the steel production area disposed of? Perhaps they were utilized as fill elsewhere on the site?

Page 4-125, 3rd Complete Paragraph - In addition to the recommended activities, we suggest that additional soil borings and soil sampling be conducted to delineate the vertical and horizontal extent of contamination.

Page 4-133, Summary Table at the Top of the Page - What is the significance of the two reported values for MW-2 during Round 3? Do those concentrations represent filtered vs. non-filtered samples? Please specify. If this represents analyses from duplicate samples, the results do not correlate very well.

26. *Section 4.6, Coke Plant Area, Page 4-153, 1st Complete Paragraph* - The necessity of a slurry wall to impede contamination of the Calumet River is dependent on the extent of contamination and the velocity of its flow toward the river. The first priority is delineation of the vertical and horizontal extent of contamination.

Page 4-164, 1st Complete Paragraph - We recommend that water from the Coke Plant pit not be disposed of at a landfill; such a proposal may greatly increase the landfill's leachate toxicity. Disposal at sewage treatment plants or other treatments are suggested alternatives.

Page 4-176, Top Table - Why are two or three values reported for several of the monitoring well sampling events?

Page 4-177, 2nd Complete Paragraph - See comment to page 4-153, 1st Complete Paragraph.

27. *Section 4.8, Coal Storage Area, Page 4-185, 7th Complete Paragraph* - See comment to page 4-153, 1st Complete Paragraph.

SECTION 5.0 - POTENTIAL CONTAMINANT PATHWAYS

28. *General Comments* - This section appears to be based on conjecture from the available information. It is not quantitative to suggest that exposure be "minimal" until all pathways are adequately addressed and analyzed. There appears to be adequate analytical data to support the identification of potential contaminant source areas, but to state that sufficient information can "quantify the severity of potential contaminant sources" is fallacious.

SECTION 6.0 - SUMMARY AND RECOMMENDATIONS

29. *General Comments* - It is true that this Interim Report provides a "foundation" by which to conduct additional studies at the Site. However, to support the complete and appropriate RI/FS, human risk assessment, and ecological assessment, it will be necessary to closely examine and scrutinize the information obtained to date. This will provide insight into the known and unknown events contributing to data gaps and

discrepancies revealed by the Interim Report. It appears that only the "tip of the iceberg" has been uncovered from this preliminary report and that a thorough exploration will be required to adequately identify and characterize source areas within this Site. From there, proper investigation of migration pathways, contaminant impacts, and receptors can be analyzed.

The current figures do not convey information in an easily interpretable manner. We suggest discussion of the presentation and formats prior to finalization of this report.

PAHs typically serve as an acronym for polycyclic aromatic hydrocarbons (naphthalene, fluoranthene, etc.) and not chlorinated hydrocarbon pesticides.

30. *Section 6.0, Summary and Recommendations, Page 6-1, 1st Complete Paragraph* - Was each monitoring well sampled and analyzed for three or four rounds? The data tables contain a "Round 4" column. If no fourth round data was collected, remove the "Round 4" column from the tables.

3rd Complete Paragraph - Figure 6-1 would greatly facilitate the description of specific contaminant sources in Section 4. We suggest that this figure be referenced in the appropriate sections.

Last Paragraph - Analytical information from surface soil samples should also be presented in Section 6.0. It could be combined with the discussion on contamination in soils and fill and on Figures 6-2 and 6-3. Additionally, the depth of the soil borings' maximum contaminant levels should be included.

Page 6-7, 5th Complete Paragraph - A risk assessment must be completed for the entire WSW site, as one unit or in smaller operable units.

The Phase I initial sampling and analysis has provided preliminary data for the completion of this Interim Report and provides guidance for the upcoming Phase II sampling and analysis during the winter and spring of 1994. Contrary to the text's indication that the Interim Report serves as the primary risk assessment and RI source, we understand that the RI report will be based on the findings of both the Phase I and Phase II. Is our understanding accurate?

31. *Page 6-2, Figure 6-1 Locations of Pits, Foundations and Outfalls* - It is difficult to evaluate this figure because of its reduced scale.

Do the investigators know how deep some of the foundations are? Are any of the footings anchored into bedrock? The location and depth of some of the footings and foundations may have some impact on contaminant migration and may be acting as a vertical conduit or barrier for contamination.

32. *Pages 6-3 and 6-4, Figures 6-2 and 6-3, Maximum Metals & PCB Levels in Soils and Fill* - The use of U.S. averages and ranges is probably not appropriate for the WSW site characterization. Additionally, it would be appropriate to indicate at what depths the metals concentrations were present.
33. *Page 6-6, Figure 6-5, Total BTEX and PAHs in Monitoring Wells, Sampling Rounds 1, 2 and 3 (ug/l)* - Was there a fourth round of ground water samples collected or not?
34. *Section 6.1, Slag Area, Page 6-7, Last Paragraph* - Although the Interim Report indicates that the "Slag Area appears to be the least contaminated area", we recommend that the slag and its underlying soils be TCLP tested.

Page 6-30, Slag Area (Recommendations) - Currently, no additional field work is proposed for the Slag Area. We recommend that some TCLP testing be performed to determine whether compounds in the slag are leaching at levels that would render the underlying material characteristically hazardous. The USDOC may be liable if they are selling this material that is leaching out hazardous constituents in other areas. A similar situation has just been litigated and determined that if the materials in question were characteristically hazardous, then it would not be exempt from CERCLA.

What is going to be done about the surface soils impacted by PAH and PCB contamination?

Have the "discarded gas tanks" been properly disposed of or are they still lying on the ground?

Has the vertical extent of contamination been delineated? Has the horizontal extent of contamination been delineated? Are we concerned with off-site contamination emanating from this area or contaminating this area?

Only five borings to a depth of approximately 25 feet have been completed for this 30-acre area, and only two monitoring wells exist in the Slag Area. We recommend that additional borings and monitoring wells be installed.

35. *Section 6.2, Office Area (Recommendations), Page 6-30* - Only one monitoring well/boring has been installed in this area to date. What is the assumed source of contamination in this area?

How deep are the footings for the Office Building? Does the building have a basement? If so, has a vapor survey been completed? Has the vertical extent of contamination been delineated? Has the horizontal extent of contamination been delineated? Are we concerned with off-site contamination emanating from this area or contaminating this area?

We recommend that additional soil borings and monitoring wells be installed in this area (possibly to the Lemont Drift and Bedrock).

36. *Section 6.3, Steel Finishing Area, Page 6-31* - Has the vertical extent of contamination been delineated? Has the horizontal extent of contamination been delineated? Are we concerned with off-site contamination emanating from this area or contaminating this area?

We recommend that additional soil borings and monitoring wells be installed in this area (possibly to the Lemont Drift and Bedrock).

Section 6.3.3, Pits and Foundations - If the water in the pits is contaminated with listed hazardous waste constituents, the proposal to pump into the Calumet River or into the Chicago POTW with no treatment would not be recommended. Use of a mobile stripper to treat the water may be preferred prior to disposal.

The location and environmental impact of the old North Slip needs to be further delineated and characterized.

37. *Section 6.4, Ore yard (Recommendations), Page 6-32* - Has the vertical extent of contamination been delineated? Has the horizontal extent of contamination been delineated? Are we concerned with off-site contamination emanating from this area?

We recommend that additional soil borings and monitoring wells be installed in this area (possibly to the Lemont Drift and Bedrock).

38. *Section 6.5 Blast Furnace Area (Recommendations), Page 6-32* - Has the vertical extent of contamination been delineated? Has the horizontal extent of contamination been delineated? Are we concerned with off-site contamination emanating from this area?

We recommend that additional soil borings and monitoring wells be installed in this area (possibly to the Lemont Drift and Bedrock).

39. *Section 6.6, Steel Production Area (Recommendations), Page 6-33* - Has the vertical extent of contamination been delineated? Has the horizontal extent of contamination been delineated? Are we concerned with off-site contamination emanating from this area?

We recommend that additional soil borings and monitoring wells be installed in this area (possibly to the Lemont Drift and Bedrock).

40. *Section 6.7, Coke Plant/Coal Storage Area (Recommendations), Page 6-34* - Has the vertical extent of contamination been delineated? Has the horizontal extent of

contamination been delineated? Are we concerned with off-site contamination emanating from this area?

We recommend that an additional soil boring be advanced to bedrock and soil samples collected to determine possible DNAPL migration.

41. *Section 6.7.3, Pits And Foundations, Page 6-35, First Paragraph* - Regarding the statement "Arsenic, chromium, mercury, zinc, and cyanide were highly elevated in coke battery foundation sediments but not measured in the gas holder foundation." Does this mean that analysis of arsenic, chromium, mercury, zinc and cyanide did not occur in sediments collected from the gas holder foundation? Or that these compounds were analyzed for but not detected in sediments collected from the gas holder foundation?
42. *Section 6.8, Future Work, Page 6-36* - If Phase 2 investigations are going to include the installation of new monitoring wells (which would allow the collection of subsurface soils and ground water), we recommend that inorganic analyses should be included as well as organic analyses. The cost of the inorganic analysis is not exorbitant and the information gained will be useful, not extraneous. We also recommend that several well nests into the Carmi, Lemont, and bedrock be installed throughout the WSW site to determine vertical gradient across the site.

2nd Complete Paragraph - If it is decided to treat the various areas as separate operable units, then there is no need to complete a risk assessment for the overall site.

Page 6-37, 3rd Complete Paragraph - Although discerning the source of contamination for river bottom sediments will be difficult, will the sediment within the slips be considered part of the WSW site?

Page 6-37, 2nd Bullet - In addition to background wells, double-cased wells should be installed in ground water at depths greater than the Wadsworth Till (within the Lemont Drift and Bedrock) to investigate possible vertical contamination.

Page 6-37, 3rd Bullet - Rather than conduct in-situ hydraulic conductivity tests, such as slug tests, we recommend that Shelby Tube samples of the Wadsworth Till be collected for laboratory determinations of the hydraulic conductivity.

Page 6-37, 4th Bullet - In addition to sampling tunnel/sewer waters, we suggest that tracer surveys be completed to determine the potential receptors.

Page 6-37, 6th Bullet - See above comment.

APPENDIX I PIEZOMETRIC SURFACES

43. *General Comments* - Many of the figures reflect a computer-generated perspective, which may, at times produce unreasonable contours. (See, for example the "hole" mentioned on page 3-26 and illustrated on page I-3.)

The contours drawn beyond the confines of the most distant monitoring wells should be dashed, because they are conjecture.

No piezometric surface maps should include till monitoring well data because the till unit does not appear to be an aquifer.

None of the effects of the filled old North Slip are visible on the piezometric surface maps, but this slip likely does effect the local contours. Additionally, MW-13 appears to have been set in the old north slip's fill, rather than the till.

As suggested in the text, MW-24 may have been inaccurately surveyed or MW24 may simply not have recovered between sampling events.

WELLS AND SOIL BORING LOGS

44. *General Comment* - No description of the monitoring well and soil boring methodologies was included in the Interim Report, but the material used to seal the well borings appears to have varied from bentonite powder to bentonite chips to "natural bentonite." If a tremie line was not used during the well constructions, there exists the possibility that the wells were not properly sealed. This possibility may greatly impact the monitoring well analytical results as well as the water level values.

**PROPOSED WELLS
PHASE II FIELD INVESTIGATION
WISCONSIN STEEL (12/93)**

<u>WELL ID</u>	<u>PLANT AREA</u>	<u>WELL PLACEMENT</u>	<u>RATIONALE</u>
MW 26A	Slag Area	Carmi Sand	Leaching of contamination from slag into sand aquifer
MW 26B	Slag Area	Top of Rock	Possible cont. of aquifer at rock surface
MW 27A	Slag Area	Carmi Sand	Leaching of cont. from old tanks (PCB's) and slag into sand
MW 27B	Slag Area	Top of Rock	Possible cont. of aquifer at rock surface
MW 28	Steel Finishing	Top of Rock	Cont. within old filled canal. Possible cont. of aquifer at rock surface
MW 29A	Steel Finishing	Carmi Sand (Water Table Well)	Heavy cont. (PCB's, Pest., Oil, PAH's, Phenol, CN) at SB-10, in sand, till, oil sheen, SB-14, spill reported vicinity of SB-14 possibly LNAPL
MW 29B	" "	Top of Rock	Possible cont. of aquifer at rock surface
MW 16B	Blast Furnace	Top of Rock	VOA's, TPH, Metals documented in till (20-25') - possible cont. of aquifer at rock surface
MW 30A	Blast Furnace (Stripper Building)	Carmi Sand (Water Table Well)	Pesticides in till (25-27') High Cd, Cu, Pb, PID 250 at 15'
MW 30B	" "	Top of Rock	Possible cont. of aquifer at rock surface

**PROPOSED WELLS
PHASE II FIELD INVESTIGATION
WISCONSIN STEEL (12/93) (Cont'd)**

<u>WELL ID</u>	<u>PLANT AREA</u>	<u>WELL PLACEMENT</u>	<u>RATIONALE</u>
MW 31A	Coke Plant (Tar Storage Tanks) (Coke Batteries)	Carmi Sand (Water Table Well)	Visible oil, highly elev. BTEX, Dichloroethene in sand at MW-19, Black dis- color, oil sheen to 25' at SB-02
MW 31B	" "	Top of Rock	Possible cont. of aquifer at rock surface
MW 32A	Steel Production	Carmi Sand (Water Table Well)	PCB's, Chlordane, BTEX, LNAPL, PAH's, gross cont. in sand, water at MW-5, MW-20
MW 32B	" "	Top of Rock	Possible cont. of aquifer at rock surface